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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/500,919	02/09/00	GRZYL	L 132/42381C2

IM62/0619
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EXAMINER

ANTHONY, J

ART UNIT	PAPER NUMBER
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1714

DATE MAILED:

06/19/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/500,919

Applicant(s)

Examiner

Group Art Unit

1714☒ Responsive to communication(s) filed on 2/9/00 & 2/8/00☐ This action is FINAL.☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims☒ Claim(s) 27-32 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.☒ Claim(s) 27-32 is/are rejected.☐ Claim(s) _____ is/are objected to.☐ Claims _____ are subject to restriction or election requirement.**Application Papers**☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.☐ The drawing(s) filed on _____ is/are objected to by the Examiner.☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.☐ The specification is objected to by the Examiner.☐ The oath or declaration is objected to by the Examiner.**Priority under 35 U.S.C. § 119**☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.☐ received in Application No. (Series Code/Serial Number) _____☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).**Attachment(s)**☐ Notice of References Cited, PTO-892☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2☐ Interview Summary, PTO-413☐ Notice of Draftsperson's Patent Drawing Review, PTO-948☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

1. Claims 34-39 filed with preliminary amendment a, on 2/9/00, have been renumbered as claims 27-32 as requested by applicant in supplemental preliminary amendment b, filed 6/8/00, since no claims 27-33 were originally filed in the specification.

Information Disclosure Statement

2. Applicant is requested to submit a copy of their officially submitted (in parent application 08/895,687) **English Language Translation of JP Patent Number 5-42230 published 23 Feb. 1993, as translated by, Rodger P. Lewis.** This request is made since the parent application S.N. 08/895,687 contains the said English Language Translation of JP Patent Number 5-42230, but said parent application is at the Board Of Appeals and is thus not presently available to the examiner.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 27-29 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of extinguishing a fire using a composition comprising at least one unsaturated perfluorocarbon compound having the formula C_xF_y , where x is 3 or 4 and y is 6

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or 8 does not reasonably provide enablement for unsaturated perfluorocarbon compounds that have a formula other than the above said formula, see page 3, lines 16-21 of the specification. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 27-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over **JP Patent Number 5-42230** published 23 Feb. 1993, as translated by, Rodger P. Lewis, in applicants' officially submitted English Language Translation of the said JP Patent, JP is taken in view of the Article entitled: "**Construction Of An Exploratory List Of Chemicals To Initiate The Search For Halon Alternatives**", to Pitts et al. (August 1990), and is further taken in view of **Robin et al.** U.S. Patent Number 5,117,917 and **optionally** in view (for all the claims) of applicants' admission, in the preliminary amendment and the Declaration filed under 37 CFR 1.132 on 10

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Feb. 1998 in Parent Application S.N. 08/895,687, of the hazard ratings for octafluoro-2-butene and hexafluoropropene as published in literature such as Sax et al.

The English language Translation of JP Patent Number 05042230 directly discloses that effective non-ozone depleting fire-extinguishing agents can be selected from both saturated and unsaturated halogenated hydrocarbons. Saturated hydrocarbons containing 1 to 4 carbon atoms are directly disclosed. Given species of such saturated fluorinated hydrocarbons are tetrafluoromethane, heptafluoropropane, pentafluorocyclopropane and hexafluorocyclobutane. Unsaturated fluorinated hydrocarbons and unsaturated fluorinated carbons containing **3 or 4** carbon atoms having at least one fluorine atom bonded to the one double bond are also directly disclosed. Examples of such unsaturated fluorinated hydrocarbons and fluorinated carbons are **hexafluoroisobutene, $\text{CH}_2=\text{C}(\text{CF}_3)_2$, (i.e. HFC-1336) and hexafluoropropene, $\text{CF}_2=\text{CFCF}_3$, (i.e. FC-216)**, see page 5-6, and Table 1 on page 8 of the English language translation. JP also directly teaches using admixtures of different fire extinguishing agents, see pages 6-7, and Tables 1-3. **Finally, JP directly suggests the use of propellant gases, such as nitrogen gas and carbon dioxide, with the taught fire-extinguishing agents and/or mixtures, see page 7, section [0025].**

JP differs from applicants' invention in the following ways: 1) JP does not directly disclose applicants' particularly claimed unsaturated perfluorinated carbon fire-extinguishing species of **octafluoro-2-butene**, 2) JP does not directly teach (i.e. by way of a specific example) a fire-extinguishing composition comprising an admixture of an unsaturated fluorinated

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hydrocarbon or an unsaturated fluorinated carbon with conventional saturated fire-extinguishing agents, and 3) JP does not directly teach (i.e. by way of an example) applicants' particular claimed streaming method of use step.

Pitts et al. (i.e. Pitts) directly teaches **hexafluoropropene**, $\text{CF}_2=\text{CFCF}_3$, (i.e. **perfluoropropene** CASN 116-15-4), and **octafluoro-2-butene** (i.e. **perfluorobutene-2** CASN 360-89-4) as potentially effective fire-extinguishing agents, see TABLE 7 on page 56 and the disclosure on page 133 wherein **perfluorobutene-2** is assigned a low toxicity hazard rating of 1. Also note that on page 132 Pitts et al teaches that **perfluoropropene** has a far higher toxicity rating of 3.

Robin et al. (i.e. Robin) teaches fire-extinguishing methods utilizing saturated $\text{C}_2\text{-C}_4$ perfluorocarbons as efficient non-ozone depleting fire extinguishing agents, used either alone or in combinations with other known fire extinguishing agents. Given examples of such compounds are octafluoropropane and decafluorobutane. The taught fire-extinguishing methods are total flooding and portable systems that may use inert gases as pressurizing agents, see the abstract, and column 2, line 1 to column 3, line 5.

Applicants' admission, in the preliminary amendment and the Declaration filed under 37 CFR 1.132 on 10 Feb. 1998 in Parent Application S.N. 08/895,687, of the hazard ratings for octafluoro-2-butene and hexafluoropropene as published in literature such as Sax et al is noted. In this said admission, applicants reveal that the 4-hour LC_{50} for hexafluoropropene is 1673 ppm for rats, and the 4-hour LC_{50} for octafluoro-2-butene is 6100 ppm for rats. As such, the 4-hour LC_{50}

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for hexafluoropropene is at least 4.28 times more toxic than the 4-hour LC_{50} is for octafluoro-2-butene.

It would have been obvious to one having ordinary skill in the art to use the disclosure of the JP especially in view of Pitts et al's disclosure to the potentially effective use of **perfluorobutene-2 (i.e. octafluoro-2-butene CASN 360-89-4)** as a fire-extinguishing agents, see TABLE 7 on page 56 and page 133, as motivation to actually use applicants' claimed unsaturated perfluorinated carbon species of **octafluoro-2-butene** as the fire-extinguishing agent of choice. This is obvious because **octafluoro-2-butene** is not only an obvious species that falls within a very narrow generic disclosure of JP to the use of unsaturated fluorinated hydrocarbons and unsaturated fluorinated carbons containing **3 or 4** carbon atoms having at least one fluorine atom bonded to the one double bond, but is directly suggested by the secondary reference to Pitts et al. Note that Pitts et al disclosure on page 133 that **perfluorobutene-2 (i.e. octafluoro-2-butene)** is assigned a low toxicity hazard rating of 1, whereas Pitts et al disclosure on page 132 that **perfluoropropene (i.e. hexafluoropropene)** has a far higher toxicity rating of 3 is motivation to one having ordinary skill in the art to substitute **perfluorobutene-2 (i.e. octafluoro-2-butene)** for JP's directly taught **hexafluoropropene (i.e. perfluoropropene)** since such as substitution would result in a fire extinguishing composition that is far less toxic! Furthermore, applicants' claimed **octafluoro-2-butene** is also deemed to be an obvious analog over JP's directly taught species of **hexafluoroisobutene, $CH_2=C(CF_3)_2$, (i.e. HFC-1336)** and **hexafluoropropene, $CF_2=CFCF_3$, (i.e. FC-216) = (i.e. perfluoropropene)** respectfully.

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Furthermore, additional motivation is present to one having ordinary skill in the art to use **octafluoro-2-butene** as the fire extinguishing agent of choice. Such additional motivation is provided by applicants' admission, in the preliminary amendment and the Declaration filed under 37 CFR 1.132, that the published literature discloses that the 4-hour LC_{50} for **hexafluoropropene** is 1673 ppm for rats, and the 4-hour LC_{50} for **octafluoro-2-butene** is 6100 ppm for rats. As such, the 4-hour LC_{50} for **hexafluoropropene** is at least 4.28 times more toxic than the 4-hour LC_{50} is for **octafluoro-2-butene**. From such data, one having ordinary skill in the art would be strongly motivated to choose **octafluoro-2-butene** over **hexafluoropropene** since **octafluoro-2-butene** is far less toxic and would thus be safer when used around human beings.

It would also have been obvious to one having ordinary skill in the art to use the disclosure of JP as motivation to make admixtures of unsaturated perfluorinated carbons, such as applicants' claimed **octafluoro-2-butene** fire-extinguishing agent, with conventional fire-extinguishing agents, such as octafluoropropane, because admixtures of the unsaturated perfluorinated species of **hexafluoropropene(FC-216)** with conventional fire-extinguishing agents, such as octafluoropropane, are directly suggested by JP, see sections [0015] and [0016] on page 6 of the English language translation of the JP reference. Furthermore, the Robin patent provides additional motivation for such admixtures, since Robin teaches that using admixtures of conventional fire-extinguishing agents are well known in the art.

Furthermore, applicants' particularly claimed methods of fire extinguishing are deemed to be well within the skill of the ordinary artisan. Such methods are deemed to be obvious design

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modifications used to meet particular needs and/or requirements. In any case, the secondary reference to Robin et al. clearly discloses that applicant's two claimed fire extinguishing methods of: 1) total flooding of enclosed regions, and 2) the use of portable systems (e.g. streaming) using inert gasses as pressurizing agents, are extremely well known fire extinguishing methods.

Furthermore, **the primary JP reference itself directly suggests the use of propellant gases, such as nitrogen gas and carbon dioxide, with the taught fire-extinguishing agents and/or mixtures, see page 7, section [0025].** The use of such propellant gases is well known in the art to be used in conjunction with portable systems that are applied to the fire as a stream. Finally, the JP reference's cup burner test are deemed to encompass applicant's claimed total flooding method of enclosed space. Thus to use applicant's claimed methods with applicants' claimed **octafluoro-2-butene**, fire-extinguishing agent either alone or in blends would have been obvious.

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321© may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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8. Claims 27-32 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 8-13 and 27-33 of copending Application No. 08/895,687. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 8-13 and 27-33 of copending application S. N. 08/895,687 are deemed to extensively overlap the subject matter of claims 27-32 of the present application S. N. 09/500,919.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

9. The following examiner comments are taken from the Examiner's Answer written in response to applicant's Appeal Brief found in the Parent Application S.N 08/895,687. These examiner comments are repeated here because they are deemed to be highly relevant to applicant's pending claims.

The examiner's position in regards to appellant's argument, found on pages 9-10 of the Brief, concerning their **Supplemental 37 CFR 1.132 Declaration filed 03 November 1998** is found below. The following examiner's comments were made in the final rejection mailed 12/10/98 as paper number 10 and are repeated here because they address two additional 37 CFR 1.132 Declarations that were filed by appellant's during the prosecution of the pending application.

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Applicant's 37 CFR 1.132 Declaration filed 10/13/98 (e.g. 13 Oct. 1998), applicant's Supplemental Response filed 11/3/98 (e.g. 03 November 1998) and **Supplemental 37 CFR 1.132 Declaration filed 11/3/98 (e.g. 03 November 1998)**, have all been fully considered but are not deemed persuasive to put the case in condition for allowance for the reason given above. Additional comments are found below.

Applicant's Supplemental 37 CFR 1.132 Declaration filed on 11/3/98 (e.g. 03 November 1998) is deemed, by the examiner, to show that the cup burner flame extinguishing concentration (i.e. FEC) for applicant's claimed fire-extinguishing species of **octafluoro-2-butene** is indeed less (average FEC of 4.7 with a Std. Deviation of 0.447214) and hence is superior to the (FEC) amount for JP's **hexafluoropropene**, (i.e. $\text{CF}_2=\text{CFCF}_3$) (FEC of 6.1 Std. Dev. 0.447338) fire extinguishing agent. Nevertheless, such results are not deemed to be unexpected.

It would have been expected by one having ordinary skill in the art that **octafluoro-2-butene** because of its higher molecular weight would be required in a smaller concentration amount to extinguish a fire than **hexafluoropropene** because of **octafluoro-2-butene** greater known heat capacity, see Pitts et al's TABLE 7 on page 56 wherein the heat capacity of **octafluoro-2-butene** and **hexafluoropropene** are listed. Furthermore, Robin et al. U.S. Patent Number 5,117,917 teaches that flame extinguishing concentrations for the saturated analogs of **octafluoro-2-butene** and **hexafluoropropene** show a similar decrease in the flame extinguishing concentrations necessary to extinguish an n-heptane diffusion flame when using perfluorobutane

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as compared to using perfluoropropane, see Example 1 Table 1 of Robin et al.. Also note that the Example 1 shows that perfluoroethane requires a greater flame extinguishing concentration than either perfluorobutane or perfluoropropane. As such, one having ordinary skill in the art would expect that the corresponding unsaturated **perfluoroalkenes** would exhibit similar extinguishing behavior, namely the higher molecular weight perfluoroalkenes would be required in a lesser amount to extinguish the n-heptane diffusion flame than the lower molecular weight **perfluoroalkenes**. As such, applicants' showing is not deemed to be unexpected.

Finally, applicant's 37 CFR 1.132 Declaration filed 10/13/98 has been carefully considered but is not deemed to be helpful at establishing either unexpected and/or superior results for applicant's claimed invention. The said Declaration compared applicant's claimed species of fire extinguishing agent **octafluoro-2-butene** against fluorinated ether type fire extinguishing agents in regards to a Cup Burner Test (FEC) and a Streaming Test known as the Minimum Application Density Test. The comparative showing is basically deemed to be irrelevant because it does not use the closest prior-art which is deemed to be the above applied prior-art to JP that teaches the use of **hexafluoropropene** as a fire extinguishing agent. It is axiomatic that an applicant relying on comparative tests to rebut a *prima facie* case of obviousness must compare the claimed invention, or at least the disclosed invention which is commensurate in scope with the claimed invention, to the **closest prior-art**, see In Re Johnson, 203 USPQ 1260, and In Re Merchant, 575 F.2d 865, 197 USPQ 785 (CCPA 1978)".

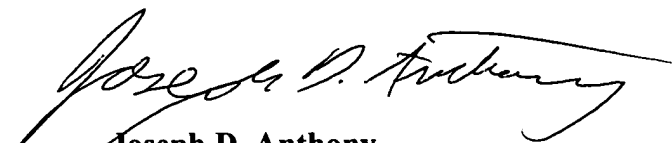
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Prior-Art Cited But Not Applied

10. Any prior-art reference which is cited on FORM PTO-892 but not applied, is cited only to show the general state of the prior-art at the time of applicant's invention.

Examiner Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Joseph D. Anthony whose telephone number is (703) 308-0446. This examiner can normally be reached on Monday through Thursday from 7:35 a.m. to 6:00 p.m. in the eastern time zone. If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Vasu Jagannathan, can be reached on (703) 306-2777. The group FAX machine number is (703) 305-5408. The group FAX machine number for After Final Faxes is (703) 305-3599. Unofficial correspondence transmitted by FAX must be marked "DRAFT". All other papers received by FAX will be treated as Official communications and cannot be immediately handled by the Examiner. Any inquiry of a general nature or relating to the status of this application should be directed to the receptionist whose telephone number is (703) 308-0651. The receptionist is located on the 8th floor of Crystal Plaza 3 (e.g. CP-3) and will be the welcome point for all visitors to the building.



Joseph D. Anthony
Primary Patent Examiner
Art Unit 1714

6/18/00